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# Effect of atenolol vs metoprolol succinate on vascular function in patients with hypertension.

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### Abstract

**BACKGROUND:** We evaluated the effect of atenolol vs metoprolol succinate on vascular function in patients with essential hypertension.

**HYPOTHESIS:** Given intrinsic differences between these agents, we hypothesized that atenolol and metoprolol succinate would have disparate effects on vascular function.

**METHODS:** This study included 24 patients with hypertension (age  $56 \pm 2$  years, 8 female, body mass index  $28 \pm 1$ ) and featured a randomized, double-blind, crossover design. Each  $\beta$ -blocker (atenolol or metoprolol succinate) was taken by patients once daily for a 4-week period. Measures of vascular function included peripheral augmentation index (AIx) and pulse wave amplitude reactive hyperemia index from peripheral arterial tonometry, and brachial artery flow-mediated dilation from ultrasound.

**RESULTS:** There were similar reductions in mean arterial pressure following treatment with atenolol and metoprolol succinate. Compared with metoprolol succinate, there was a significant increase in peripheral AIx following atenolol therapy ( $P < 0.05$ ). There were no changes in brachial artery flow-mediated dilation or pulse wave amplitude reactive hyperemia index following either drug treatment.

**CONCLUSIONS:** Although atenolol and metoprolol succinate have similar effects on blood-pressure reduction, they have different effects on vascular function. Compared with metoprolol succinate, atenolol increases peripheral AIx. Neither drug has an effect on vascular endothelial function. These findings may have clinical implications, depending on the indication for treatment in an individual patient.

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